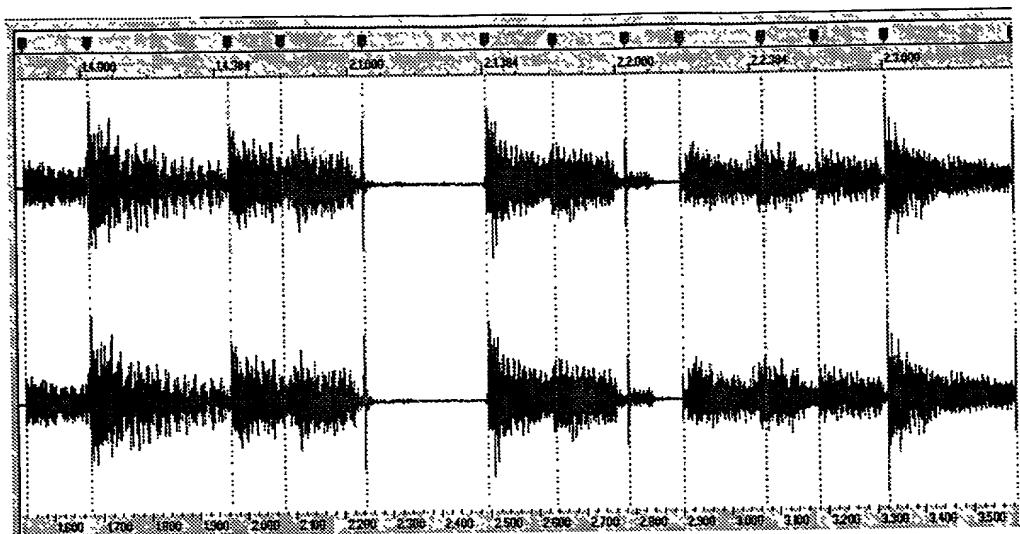
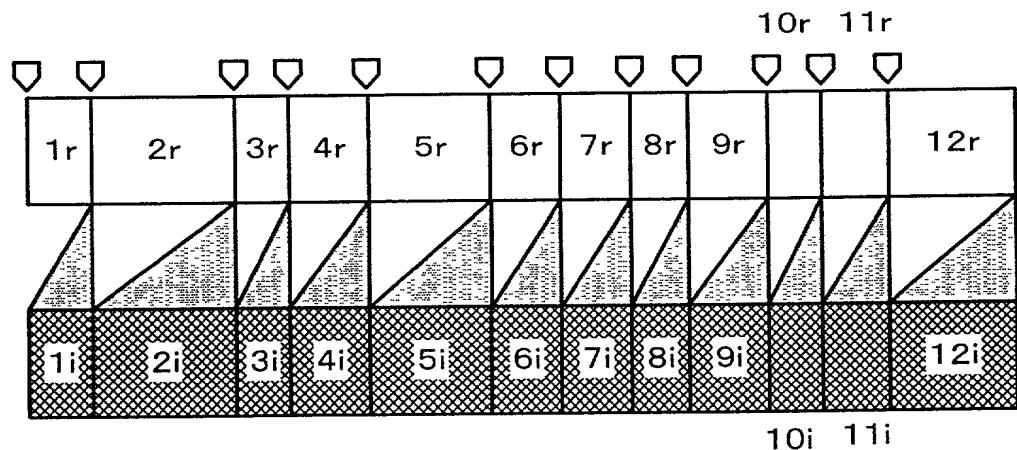


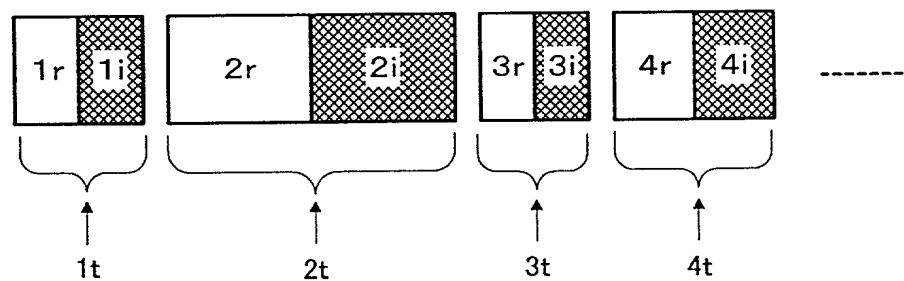
FIG. 1



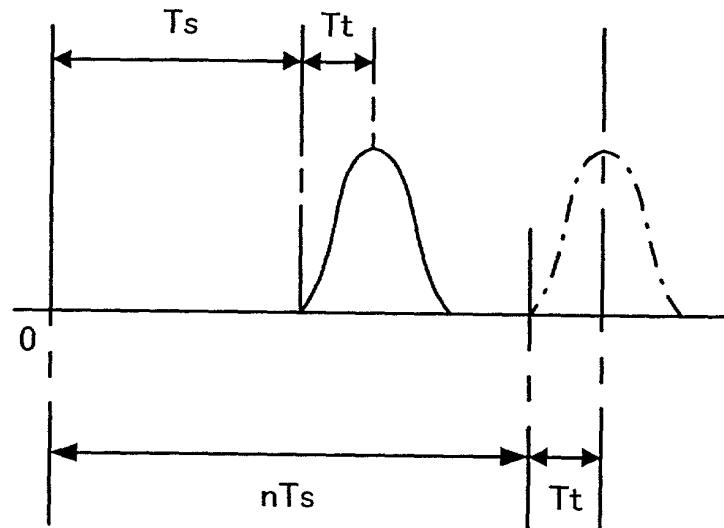
F I G. 2 A



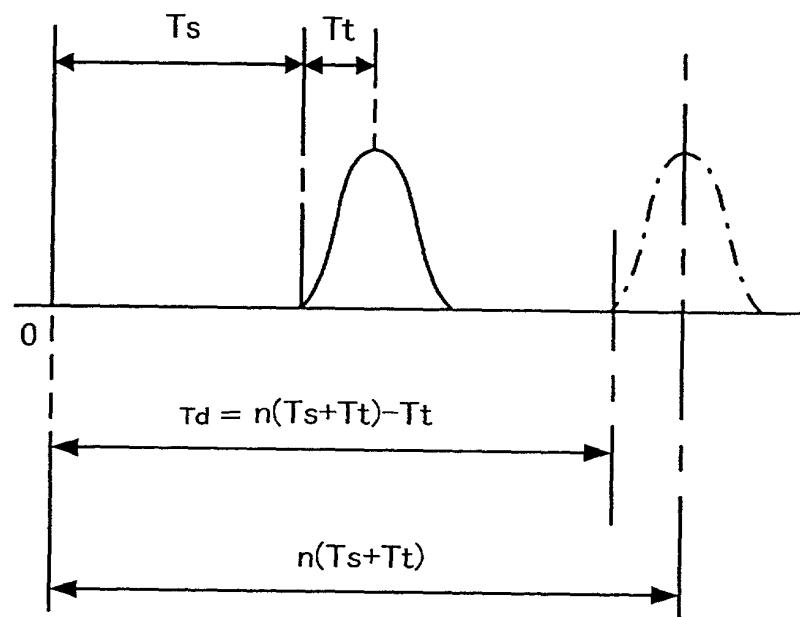
F I G. 2 B



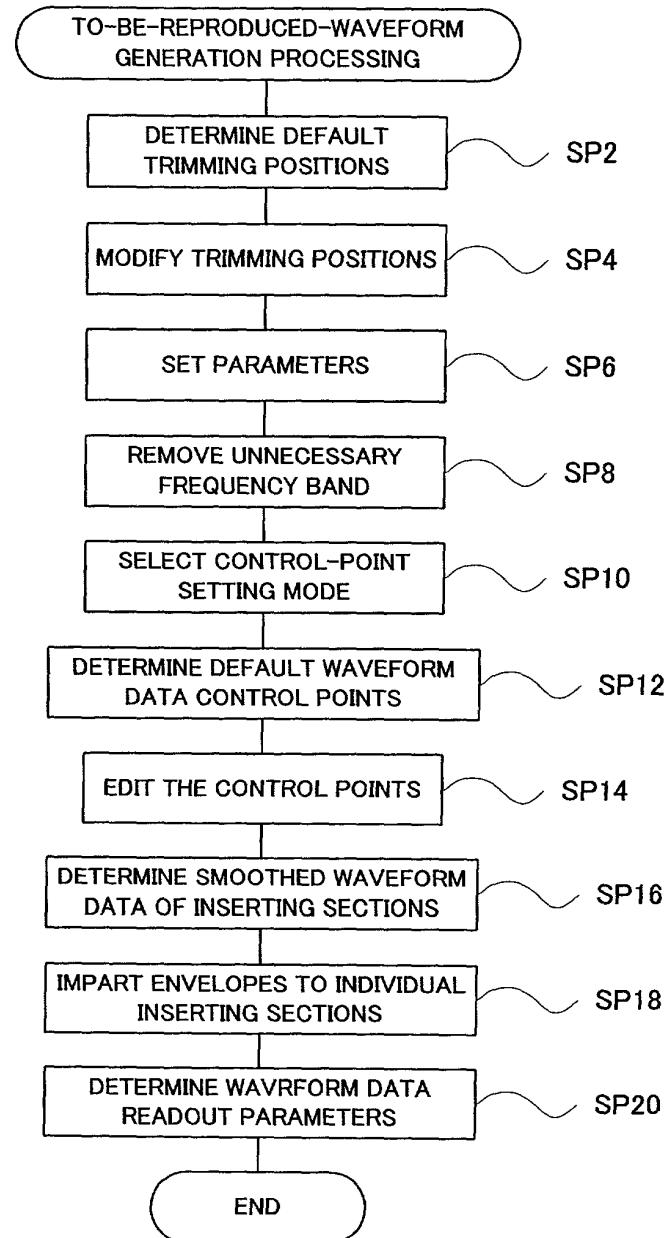
F I G. 2 C



F I G. 3 A



F I G. 3 B



F I G. 4

Title: Waveform Data Analysis Method and Apparatus...

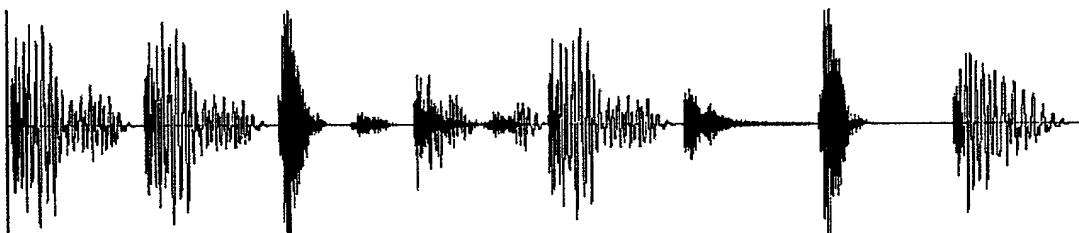
Inventor: Toru KITAYAMA et al.

Application No.: Not yet assigned

Docket No.: 393032030300

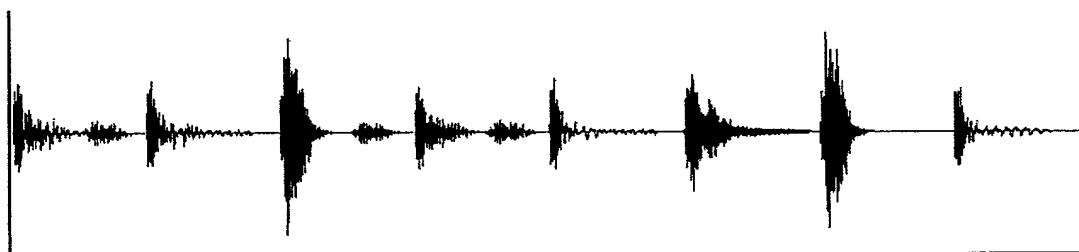
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INPUT SIGNAL



F I G. 5 A

RESULT OF UNNECESSARY FREQUENCY BAND REMOVAL

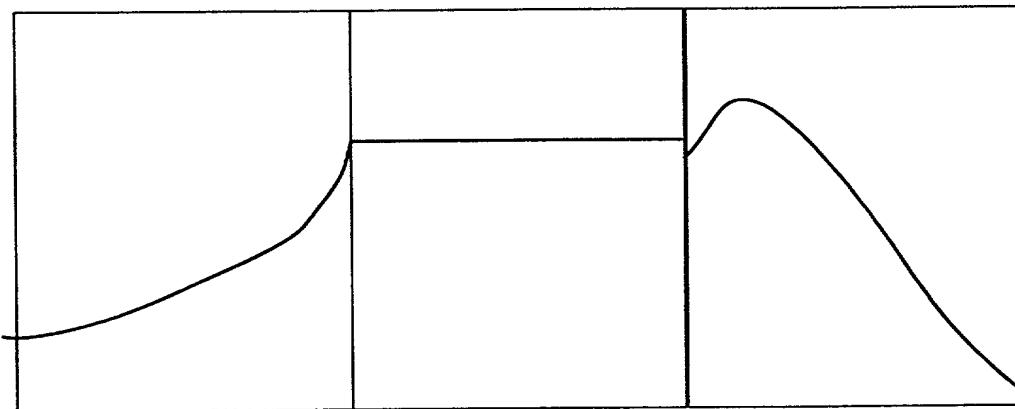


F I G. 5 B

nr

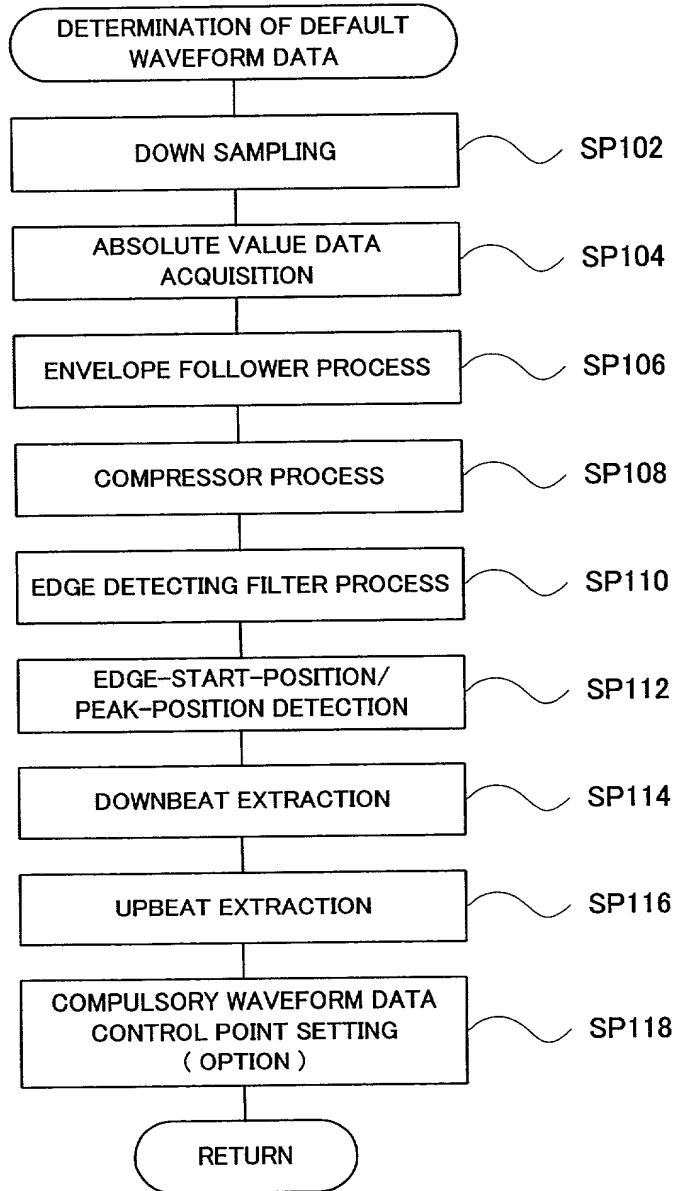
ni

(n+1)r



F I G. 1 5

(CONTROL POINTS STEP SP12)



F I G. 6

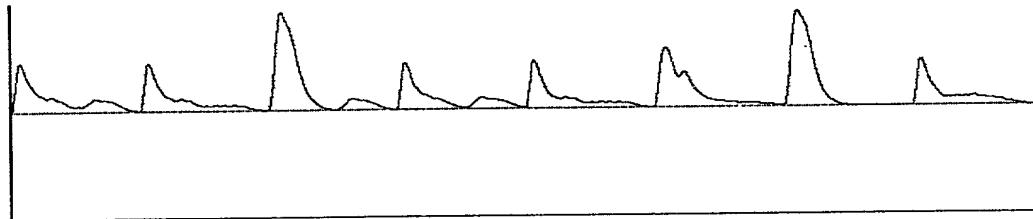
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ABSOLUTE VALUE



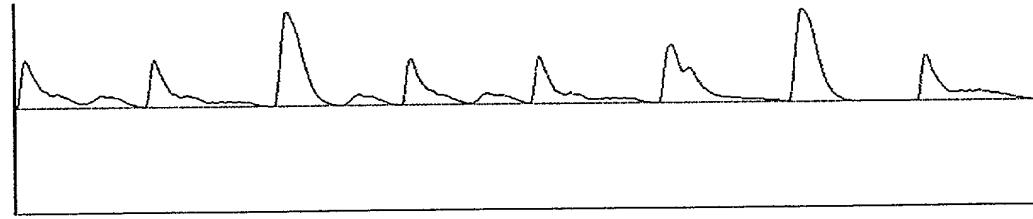
F I G. 7 A

RESULT OF ENVELOPE FOLLOWER PROCESS



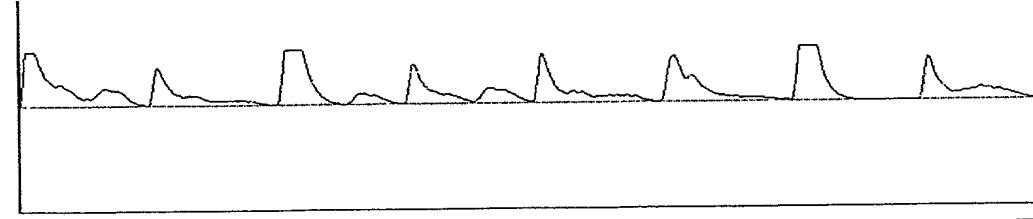
F I G. 7 B

RESULT OF LOW-PASS FILTER PROCESS

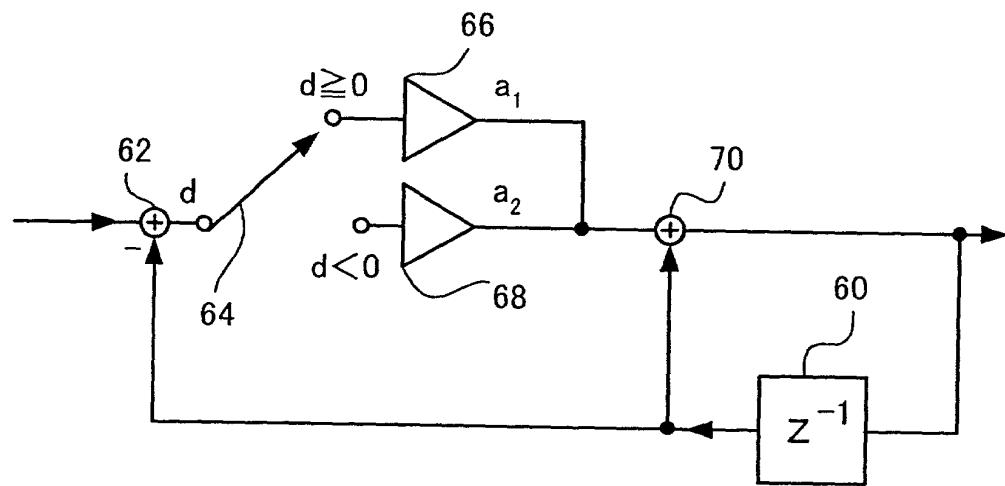


F I G. 7 C

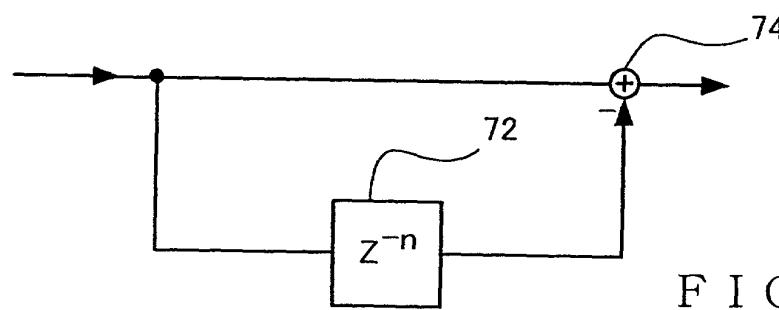
RESULT OF COMPRESSOR PROCESS



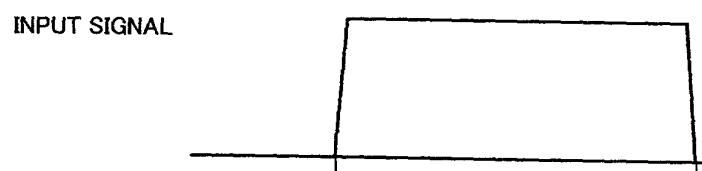
F I G. 7 D



F I G. 8



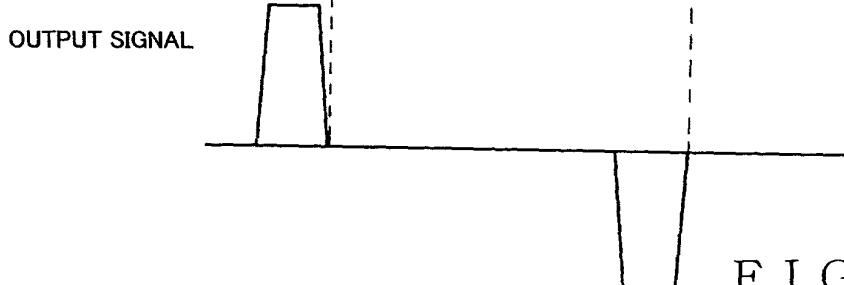
F I G. 9 A



F I G. 9 B

INPUT SIGNAL

DELAYED/INVERTED SIGNAL



F I G. 9 C

F I G. 9 D

RESULT OF EDGE EXTRACTION

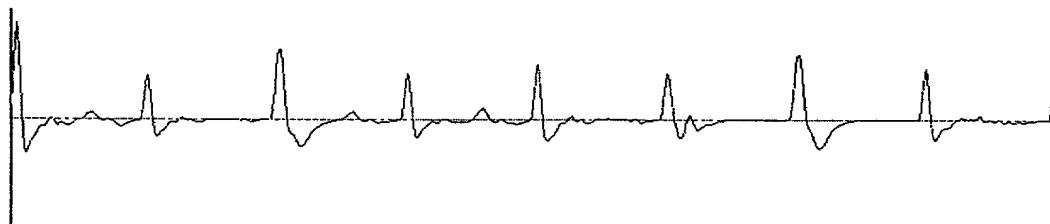


FIG. 10A

EDGE INFORMATION

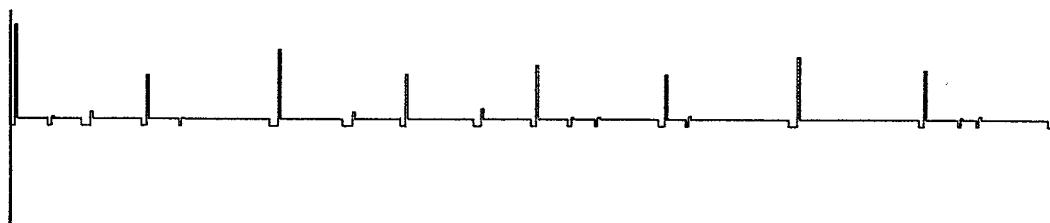


FIG. 10B

DOWNBEAT DETECTING WINDOW

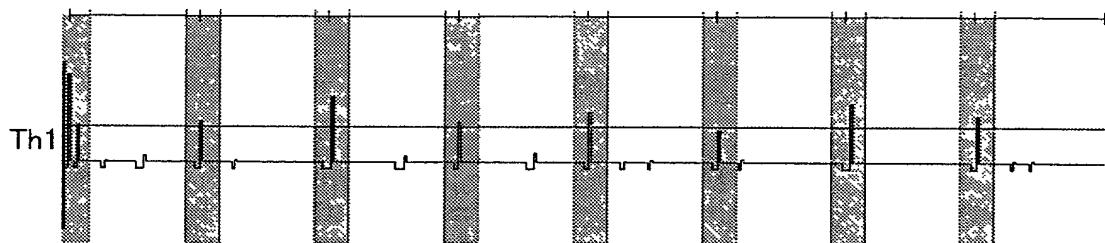


FIG. 10C

RESULT OF DOWNBEAT DETECTION

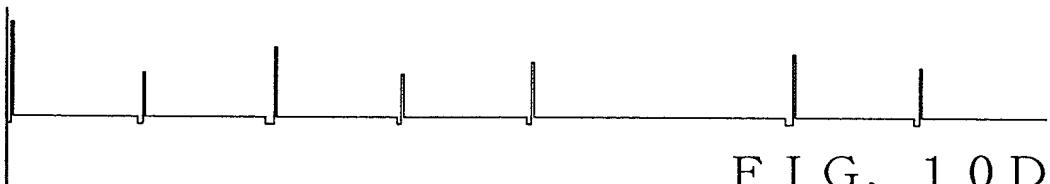
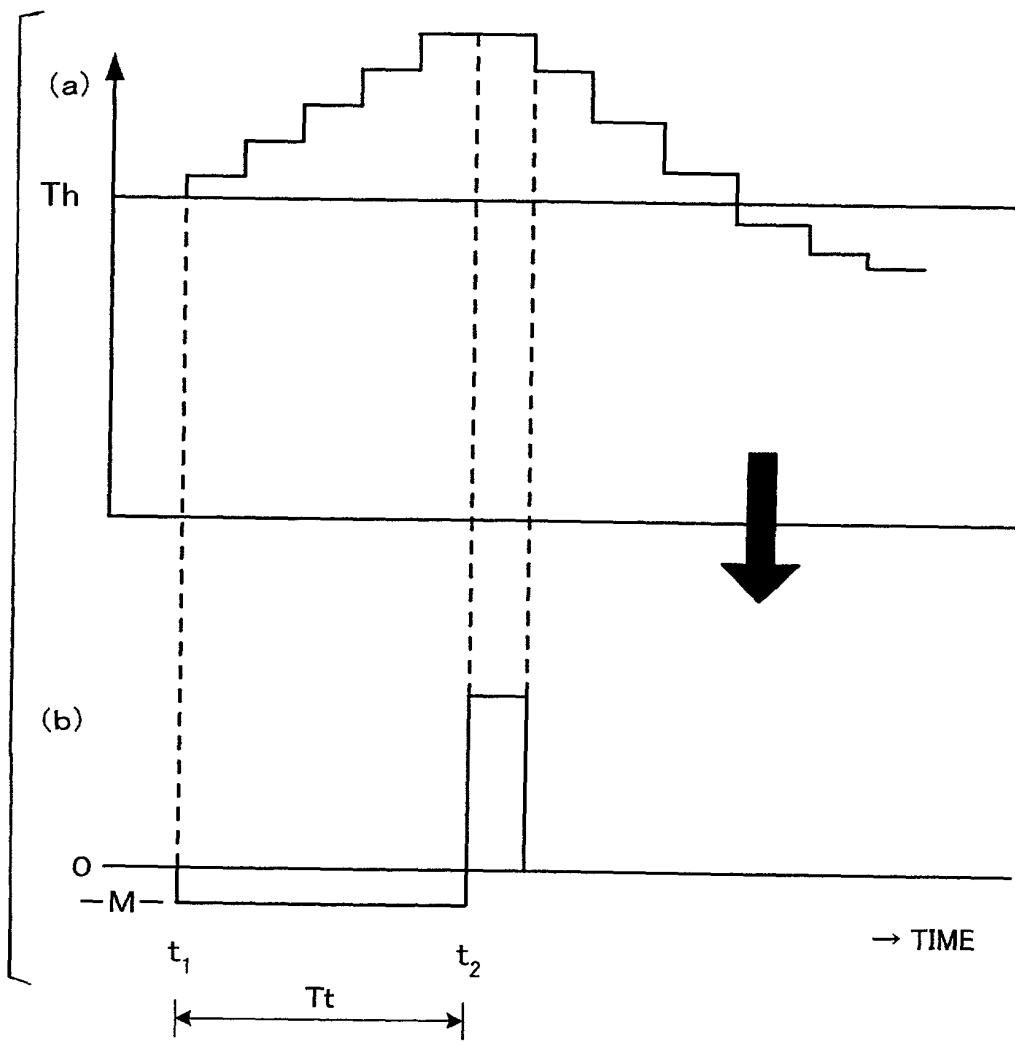


FIG. 10D

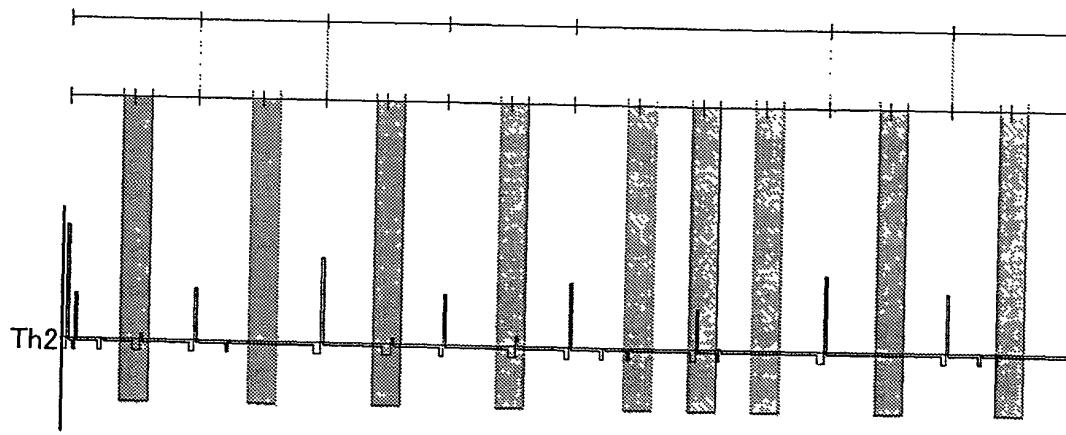
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F I G. 1 1

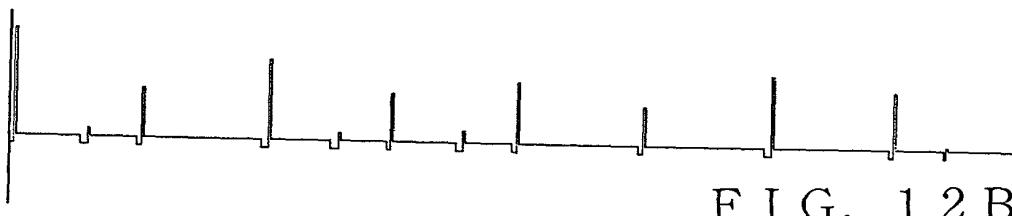
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UPBEAT DETECTING WINDOW



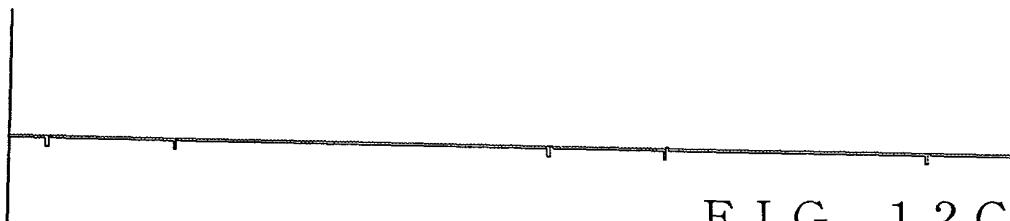
F I G. 1 2 A

RESULT OF DOWNBEAT & UPBEAT DETECTION



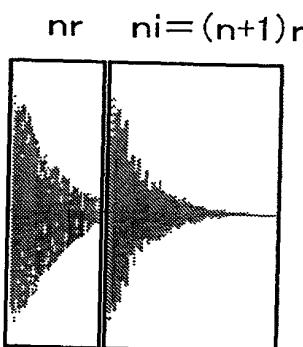
F I G. 1 2 B

EDGE INFORMATION EXCLUDED FROM DETECTING WINDOW

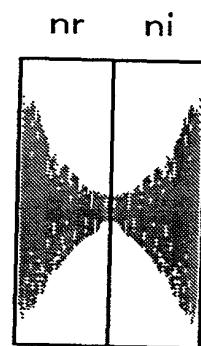


F I G. 1 2 C

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F I G. 1 3 A

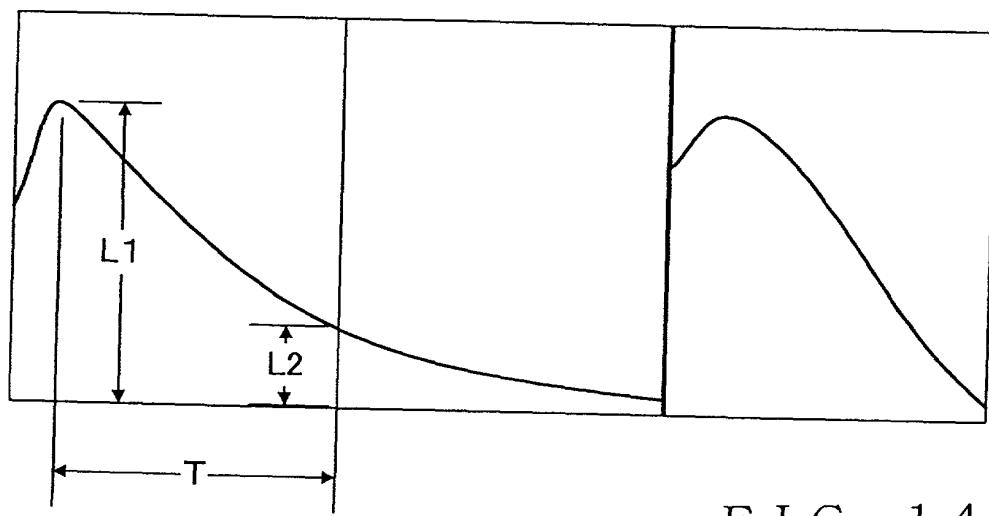


F I G. 1 3 B

nr

ni

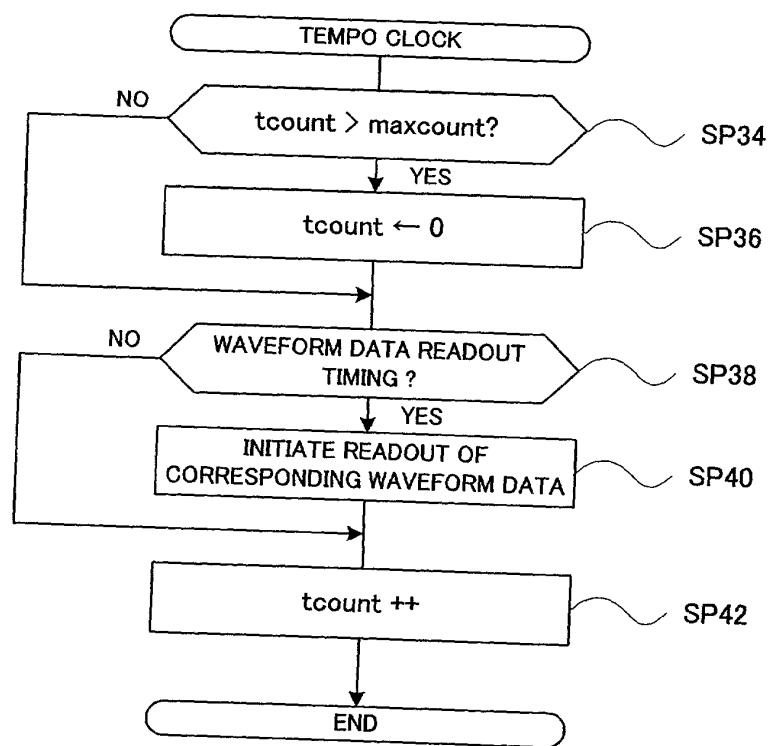
$(n+1)r$



WAVEFORM-DATA-GENERATION- START TRIGGERING CLOCK COUNT	WAVEFORM DATA	RISING TIME T_t [msec]
0	1t	0
28	2t	30
74	3t	40
:	:	:
349	11t	20
370	12t	10

F I G. 1 6

1000544526 10143602



F I G. 1 7

FIGURE 18
FIGURE 18
FIGURE 18

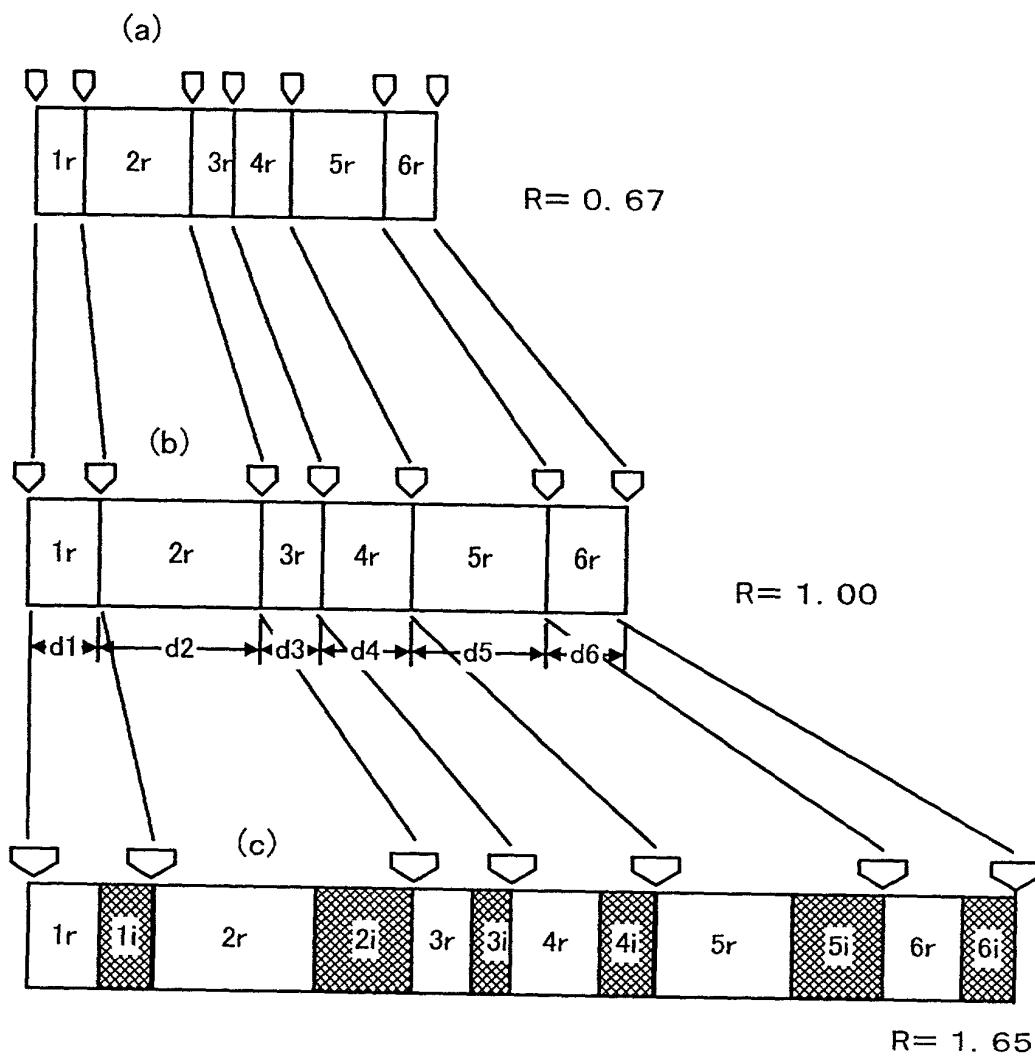


FIG. 18

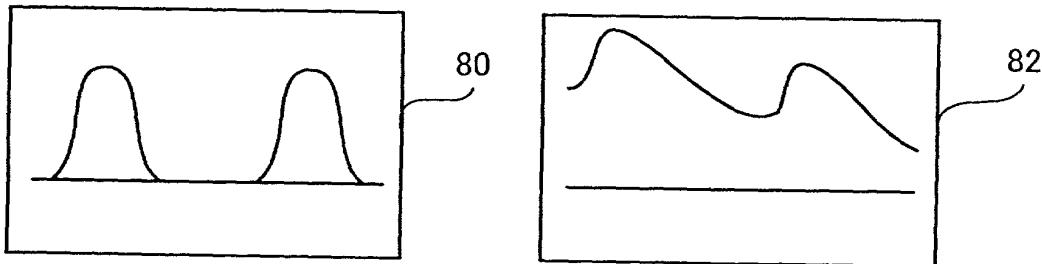


FIG. 19

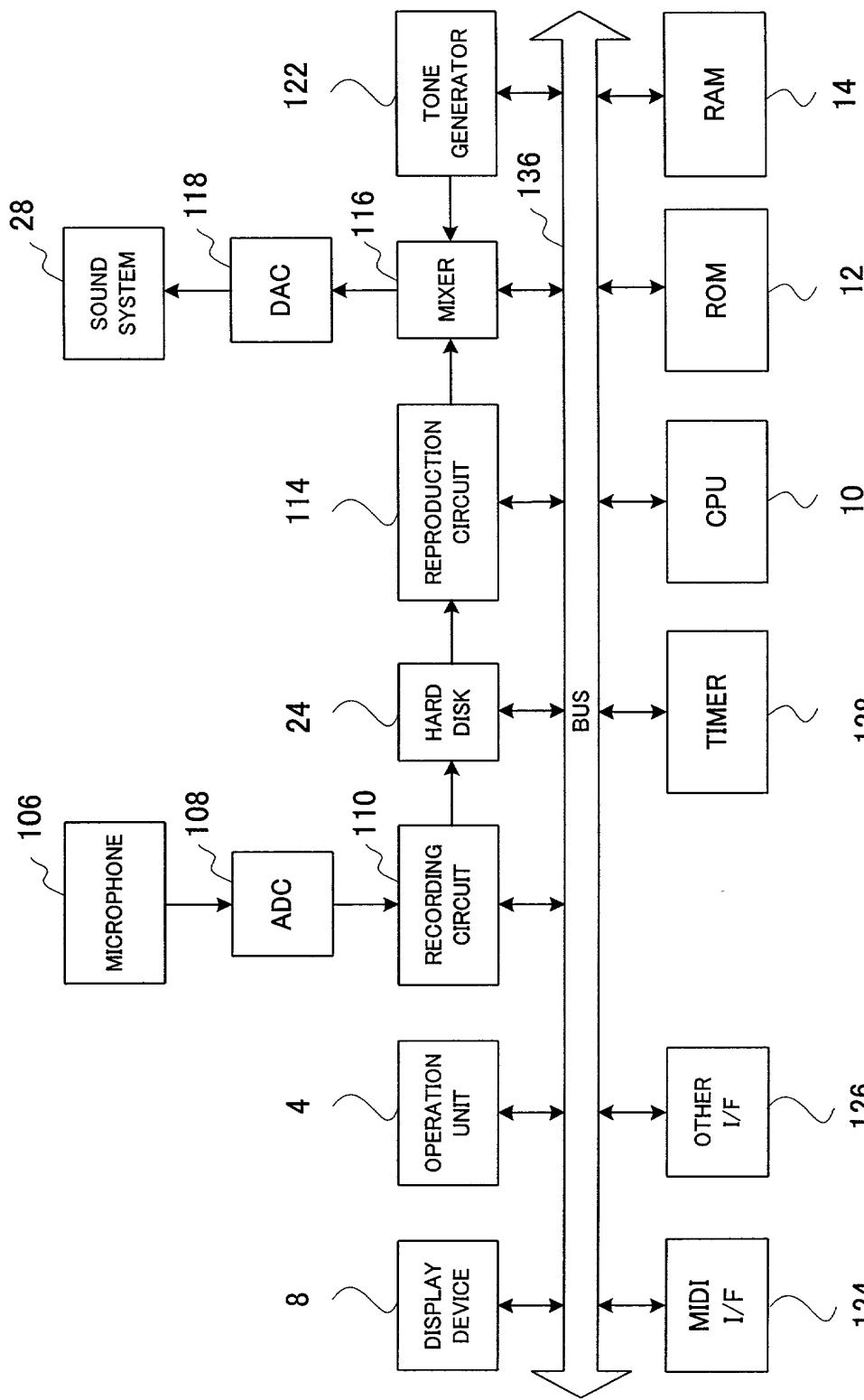
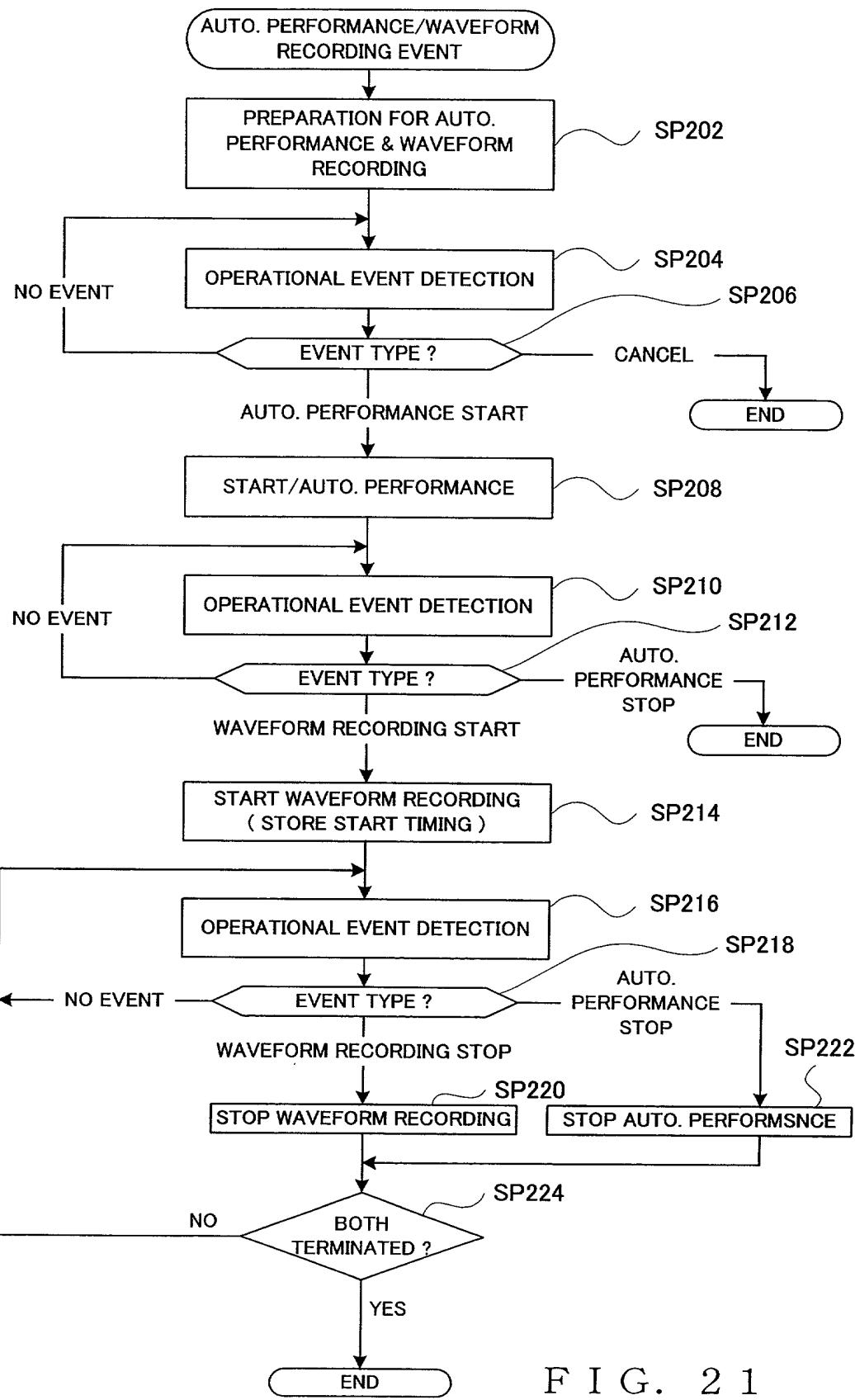


FIG. 20



F I G. 2 1

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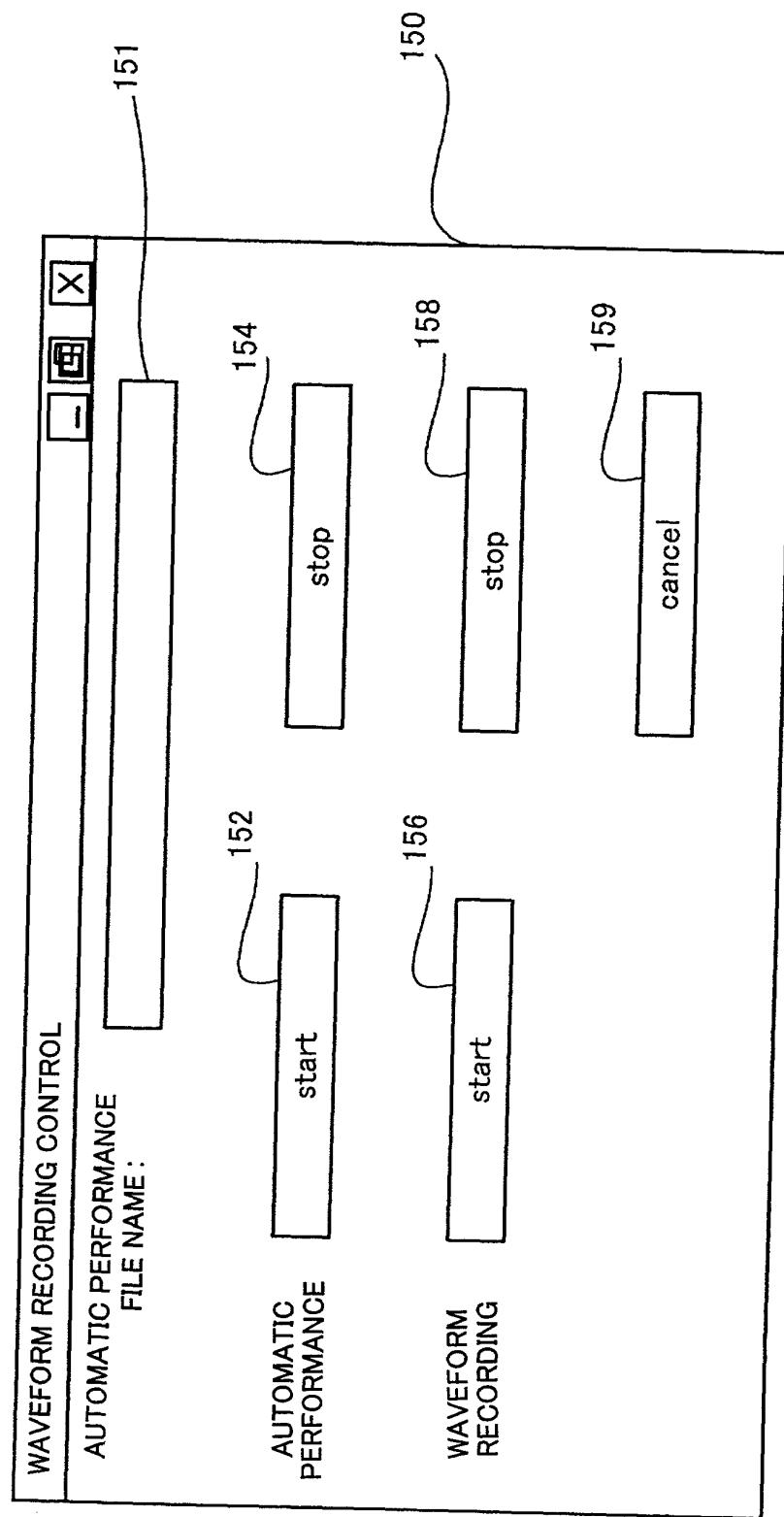


FIG. 22

AUTOMATIC PERFORMANCE DATA



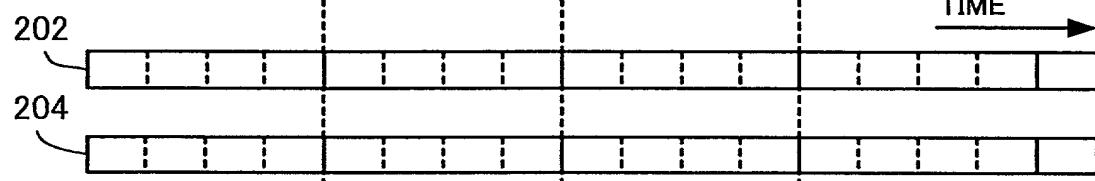
F I G. 2 3 A

PHRASE WAVEFORM DATA

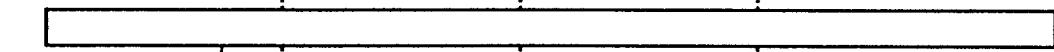


F I G. 2 3 B

AUTOMATIC PERFORMANCE TRACK



WAVEFORM TIMING TRACK



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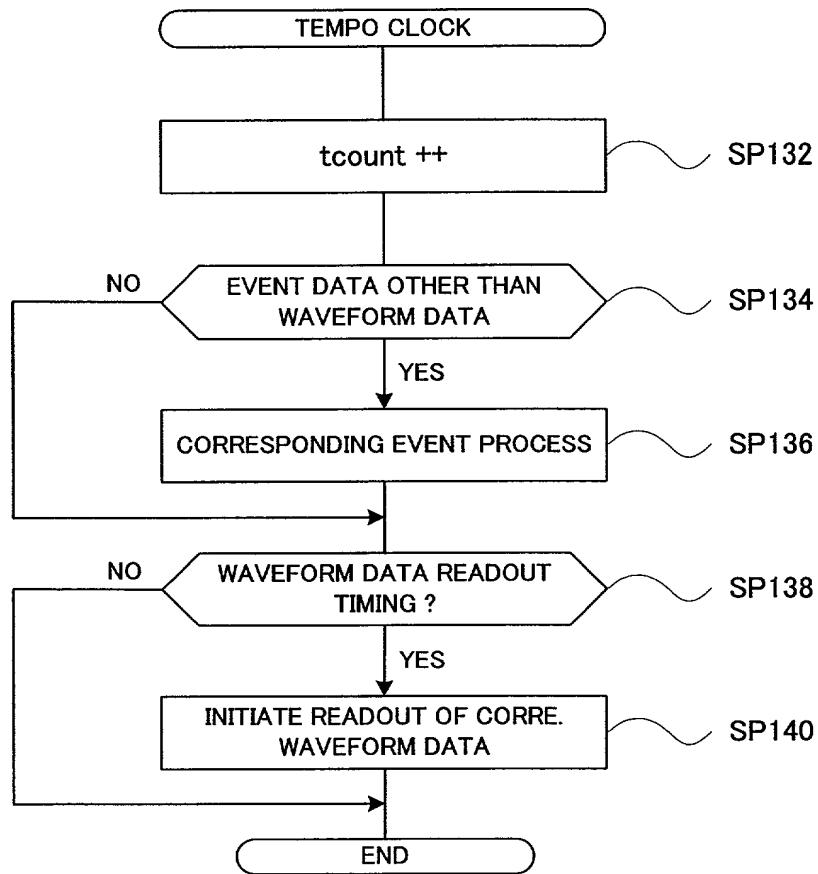
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START OF
WAVEFORM
RECORDING

AUTO. DIVISION



F I G. 2 3 C



F I G. 2 4